

WHAT IS CLAIMED IS:

1 1. A process for decreasing energy usage in a polyethylene
2 terephthalate production process where following polycondensation, polyethylene
3 terephthalate is pelletized and crystallized, comprising

4 a) solidifying molten polyethylene terephthalate to form
5 amorphous polyethylene terephthalate pellets and cooling the pellets to a temperature
6 from about 50°C to about the Tg of the polyethylene terephthalate to form warm
7 polyethylene terephthalate pellets; and

8 b) conveying said warm polyethylene terephthalate pellets to a
9 crystallizer, wherein the temperature of the warm polyethylene terephthalate pellets
10 is in the range of about 50° to below the Tg of the polyethylene terephthalate at an
inlet of the crystallizer.

1 2. The process of claim 1, wherein said step of conveying
2 comprises introducing said warm pellets from a step of pelletizing into a stream of
3 water having a temperature of between about 50°C and 90°C.

1 3. The process of claim 2, wherein prior to said step of
2 introducing said warm pellets into said crystallizer, water is removed from said
3 warm polyethylene terephthalate pellets.

1 4. The process of claim 3, wherein water is removed prior to or
2 during said step of conveying.

1 5. The process of claim 3, wherein water is removed by means
2 of a foraminous screen.

1 6. The process of claim 3, wherein water is removed in a
2 mechanical dryer.

1 7. The process of claim 5, wherein water is removed in a
2 mechanical dryer.

1 8. The process of claim 2, wherein said warm pellets have a
2 temperature in the range of 70°C to 90°C at the inlet to said crystallizer.

1 9. The process of claim 2, wherein said stream of water
2 comprises water recirculated from a water removal step.

1 10. The process of claim 6, wherein no heat energy is added to
2 said dryer.

1 11. The process of claim 1, wherein said step of conveying
2 comprises introducing said warm pellets from said step of pelletizing into a gas
3 stream.

1 12. The process of claim 11, wherein said gas stream, prior to
2 contact with said pellets, has a temperature in the range of 40°C to 90°C.

1 13. The process of claim 11, wherein said gas stream, prior to
2 contact with said pellets, has a temperature in the range of 50°C to 70°C.

1 14. The process of claim 11, wherein prior to said step of
2 introducing said warm pellets into said crystallizer, water from said steps of
3 solidifying and/or pelletizing is removed from said warm polyethylene terephthalate
4 pellets.

1 15. The process of claim 14 wherein said water is removed in a
2 mechanical dryer.

1 16. The process of claim 11, wherein said warm pellets have a
2 temperature in the range of 70°C to 90°C at the inlet to said crystallizer.

1 17. The process of claim 1, wherein prior to said step of
2 pelletizing, water is removed from said solidified strands by a blast of air.

1 18. The process of claim 1, wherein said warm polyethylene
2 terephthalate pellets are conveyed directly to said crystallizer without intermediate
3 storage.